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## A READY METHOD OF PREPARING A SILICA TURBIDITY STANDARD

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ALTHOUGH the candle or electric light turbidimeter has largely replaced comparison with silica standards as a laboratory method of determining the turbidity of water, these instruments, equipped with the usual short tube, are of use only where the turbidity is above 100, while the platinum wire method is applicable only in field work. Even there its use is limited to waters of neither very high nor very low turbidity, besides which there is not infrequently great difficulty in securing the necessary conditions of light. Direct comparison with silica standards is, therefore, the method which must be resorted to in most cases where the turbidity is below 100.

Of all standards used by the water analyst, the silica turbidity standard is the most difficult to prepare. Even after the very tedious preparation of the diatomaceous silica itself, the powder so obtained is not always of the required degree of fineness, thus necessitating standardization by the platinum wire method or by use of the candle turbidimeter, instead of simply adding a gram per liter as originally recommended, to secure a standard of 1,000 parts turbidity per million.

The above considerations led the writer, about a year ago, to examine a number of commercial products with the view of obtaining a satisfactory substitute for the diatomaceous silica, so difficult of preparation. Various polishing powders, advertised by the manufacturers as being made from diatomaceous earth, were first tried, but none of these possessed the requisite degree of fineness or uniformity. Finally a test was made of a toilet preparation sold under the name of "Pears' Precipitated Fuller's Earth," and this has appeared to meet all the practical requirements.

This powder is almost pure white in appearance, and standards prepared from it are indistinguishable from those made from diatomaceous silica secured by the method recommended originally by

Whipple and Jackson and incorporated in the "Report of the Committee on Standard Methods of Water Analysis," of this Association.<sup>1</sup> It has even seemed to the writer that the tendency to striation, noticeable chiefly in the higher standards, is less marked.

A rough analysis of the "precipitated fuller's earth" showed it to be largely a silicate of aluminum, rather than a true silica, and the term "precipitated" is probably not used in its chemical sense. The theoretical objection of its not being a strict silica does not seem to the writer to be a serious objection, since the powder shows no tendency to lump on standing, and standards made five months ago still maintain their original turbidity unaltered.

A request to the manufacturers, asking certain particulars concerning this preparation, especially as to whether the method of manufacture was such that uniformity of the product could be assured, brought no response, but several lots bought at different times were all perfectly uniform. As each package contains about 200 grams, gross, it is a simple matter to standardize each lot when purchased, and thereafter standards can be made quickly at any time. The writer has found, however, that a suspension of one gram per liter gives a standard of 1,000 in all of the samples tested; and it would therefore seem probable that this would regularly be the case, though, naturally, it would be advisable not to assume this to be so without actual testing of each new lot.

<sup>1</sup>*Jour. Infect. Dis.*, 1905, Supplm. No. 1, p. 1.